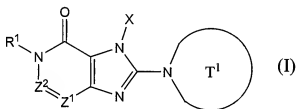


**Amendments to the Claims:**

The following is a complete list of claims indicating the changes incorporated by the present amendment and replacing all prior versions of the claims. Any claims canceled herein and all deletions made in claims that are not canceled herein are done so without prejudice to being re-instituted at a later date in this or a related application.

**Listing of Claims:**

1. (currently amended) A compound represented by the following formula, or a salt or hydrate thereof,



wherein,

T<sup>1</sup> represents a monocyclic or bicyclic 4- to 12-membered heterocyclic group containing one or two nitrogen atoms in the ring, that may have one or more substituents;

X represents a C<sub>1-6</sub> alkyl group which may have one or more substituents, a C<sub>2-6</sub> alkenyl group which may have one or more substituents, a C<sub>2-6</sub> alkynyl group which may have one or more substituents, a C<sub>6-10</sub> aryl group which may have one or more substituents, a 5 to 10-membered heteroaryl group which may have one or more substituents, a C<sub>6-10</sub> aryl C<sub>1-6</sub> alkyl group which may have one or more substituents, or a 5 to 10-membered heteroaryl C<sub>1-6</sub> alkyl group which may have one or more substituents;

**Z<sup>1</sup> and Z<sup>2</sup> each independently represent a nitrogen atom or a group represented by the formula -CR<sup>2</sup>=;**

**Z<sup>2</sup> is a nitrogen atom;**

**Z<sup>1</sup> is a group represented by the formula -CR<sup>2</sup>=;**

R<sup>1</sup> and R<sup>2</sup> each independently represent a group according to the formula -A<sup>0</sup>-A<sup>1</sup>-A<sup>2</sup>  
(wherein A<sup>0</sup> represents a single bond or a C<sub>1-6</sub> alkylene group which may have 1 to 3 substituents selected from group B consisting of the substituents described below;

A<sup>1</sup> represents a single bond, an oxygen atom, a sulfur atom, a sulfinyl group, a sulfonyl group, a carbonyl group, a group represented by the formula -O-CO-, a group represented by the formula -CO-O-, a group represented by the formula -NR<sup>A</sup>-, a group represented by the formula -CO-NR<sup>A</sup>-, a group represented by the formula -NR<sup>A</sup>-CO-, a group represented by the formula -SO<sub>2</sub>-NR<sup>A</sup>-, or a group represented by the formula -NR<sup>A</sup>-SO<sub>2</sub>-;

A<sup>2</sup> and R<sup>A</sup> each independently represent a hydrogen atom, a halogen atom, a cyano group, a C<sub>1-6</sub> alkyl group, a C<sub>3-8</sub> cycloalkyl group, a C<sub>2-6</sub> alkenyl group, a C<sub>2-6</sub> alkynyl group, C<sub>6-10</sub> aryl group, a 5 to 10-membered heteroaryl group, a 4 to 8-membered heterocyclic group, a 5 to 10-membered heteroaryl C<sub>1-6</sub> alkyl group, a C<sub>6-10</sub> aryl C<sub>1-6</sub> alkyl group, or a C<sub>2-7</sub> alkylcarbonyl group; however, A<sup>2</sup> and R<sup>A</sup> each independently may have 1 to 3 substituents selected from the substituent group B described below:

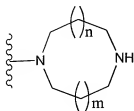
**when Z<sup>2</sup> is a group represented by the formula -CR<sup>2</sup>=, R<sup>1</sup>, and R<sup>2</sup> may in combination form a 5 to 7-membered ring;**

**except in cases where: [1] R<sup>1</sup> is a hydrogen atom; Z<sup>1</sup> is a nitrogen atom; and Z<sup>2</sup> is -CH=; and [2] Z<sup>1</sup> is a nitrogen atom; and Z<sup>2</sup> is -C(OH)=;**

<Substituent group B>

Substituent group B represents the group consisting of: a hydroxyl group, a mercapto group, a cyano group, a nitro group, a halogen atom, a trifluoromethyl group, a C<sub>1-6</sub> alkyl group which may have one or more substituents, a C<sub>3-8</sub> cycloalkyl group, a C<sub>2-6</sub> alkenyl group, a C<sub>2-6</sub> alkynyl group, a C<sub>6-10</sub> aryl group, a 5 to 10-membered heteroaryl group, a 4 to 8-membered heterocyclic group, a C<sub>1-6</sub> alkoxy group, a C<sub>1-6</sub> alkylthio group, a group represented by the formula -SO<sub>2</sub>-NR<sup>B1</sup>-R<sup>B2</sup>, a group represented by the formula -NR<sup>B1</sup>-CO-R<sup>B2</sup>, a group represented by the formula -NR<sup>B1</sup>-R<sup>B2</sup> (where R<sup>B1</sup> and R<sup>B2</sup> each independently represent a hydrogen atom or a C<sub>1-6</sub> alkyl group), a group represented by the formula -CO-R<sup>B3</sup> (where R<sup>B3</sup> represents a 4 to 8-membered heterocyclic group), a group represented by the formula -CO-R<sup>B4</sup>-R<sup>B5</sup> and a group represented by the formula -CH<sub>2</sub>-CO-R<sup>B4</sup>-R<sup>B5</sup> (where R<sup>B4</sup> represents a single bond, an oxygen atom, or a group represented by the formula -NR<sup>B6</sup>; R<sup>B5</sup> and R<sup>B6</sup> each independently represent a hydrogen atom, a C<sub>1-6</sub> alkyl group, a C<sub>3-8</sub> cycloalkyl group, a C<sub>2-6</sub> alkenyl group, a C<sub>2-6</sub> alkynyl group, a C<sub>6-10</sub> aryl group, a 5 to 10-membered heteroaryl group, a 4 to 8-membered heterocyclic C<sub>1-6</sub> alkyl group, a C<sub>6-10</sub> aryl C<sub>1-6</sub> alkyl group, or a 5 to 10-membered heteroaryl C<sub>1-6</sub> alkyl group)).

2. (original) The compound according to claim 1, or a salt or hydrate thereof, wherein T<sup>1</sup> is, a group represented by the following formula:



(wherein, n and m each independently represent 0 or 1) which may have one or more substituents;

an azetidin-1-yl group which may have one or more substituents;

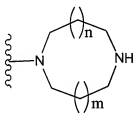
a pyrrolidin-1-yl group which may have one or more substituents;

a piperidin-1-yl group which may have one or more substituents; or

an azepan-1-yl group which may have one or more substituents.

3. (original) The compound according to claim 1, or a salt or hydrate thereof, wherein  $T^1$  is,

a group represented by the following formula :



(where n and m each independently represent 0 or 1);

an azetidin-1-yl group which may have an amino group;

a pyrrolidin-1-yl group which may have an amino group;

a piperidin-1-yl group which may have an amino group; or

an azepan-1-yl group which may have an amino group.

4. (original) The compound according to claim 1, or a salt or hydrate thereof, wherein  $T^1$  is a piperazin-1-yl group or a 3-aminopiperidin-1-yl group.

5. (original) The compound according to claim 1, or a salt or hydrate thereof, wherein  $T^1$  is a piperazin-1-yl group.

6. (previously presented) The compound according to claim 1, or a salt or hydrate thereof, wherein X is a group represented by the formula  $-X^1-X^2$  (where  $X^1$  represents a single bond or a methylene group which may have one or more substituents;  $X^2$  represents a  $C_{2-6}$  alkenyl group which may have one or more substituents, a  $C_{2-6}$  alkynyl group may have one or more substituents, or a phenyl group which may have one or more substituents).

7. (previously presented) The compound according to claim 1, or a salt or hydrate thereof, wherein X is a group represented by the formula  $-X^{11}-X^{12}$  (where  $X^{11}$  represents a single bond or a methylene group;  $X^{12}$  represents a  $C_{2-6}$  alkenyl group, a  $C_{2-6}$  alkynyl group, or a phenyl group which may have one or more substituents).

8. (previously presented) The compound according to claim 6, or a salt or hydrate thereof, wherein the phenyl group that may have one or more substituents is a phenyl group which may have at the 2-position a substituent selected from the group consisting of a hydroxyl group, a fluorine atom, a chlorine atom, a methyl group, an ethyl group, a fluoromethyl group, a vinyl group, a methoxy group, an ethoxy group, an acetyl group, a cyano group, a formyl group, and a  $C_{2-7}$  alkoxy carbonyl group.

9. (previously presented) The compound according to claim 1, or a salt or hydrate thereof, wherein X is a 3-methyl-2-buten-1-yl group, a 2-buten-1-yl group, a benzyl group, or a 2-chlorophenyl group.

10. (previously presented) The compound according to claim 1, or a salt or hydrate thereof, wherein X is a 2-buten-1-yl group.

11. (canceled)

12. (withdrawn) The compound according to claim 1, or a salt or hydrate thereof, wherein,

Z<sup>1</sup> is a nitrogen atom; and

Z<sup>2</sup> is a group represented by the formula -CR<sup>2</sup>=

(where R<sup>2</sup> is as defined above in claim 1).

13. (canceled)

14. (previously presented) The compound according to claim 1, or a salt or hydrate thereof,

wherein R<sup>1</sup> represents a hydrogen atom, or a group represented by the formula -A<sup>10</sup>-A<sup>11</sup>-A<sup>12</sup>

(where A<sup>10</sup> represents a C<sub>1-6</sub> alkylene group which may have 1 to 3 substituents selected from the substituent group C described below;

A<sup>11</sup> represents a single bond, an oxygen atom, a sulfur atom or a carbonyl group;

A<sup>12</sup> represents a hydrogen atom, a C<sub>6-10</sub> aryl group which may have 1 to 3 substituents selected from the substituent group C described below, a 5 to 10-membered heteroaryl group which may have 1 to 3 substituents selected from the substituent group C described below, a 5 to 10-membered heteroaryl C<sub>1-6</sub> alkyl group which may have 1 to 3 substituents selected from the substituent group C described below, or a C<sub>6-10</sub> aryl C<sub>1-6</sub> alkyl group which may have 1 to 3 substituents selected from the substituent group C described below:

<Substituent group C>

Substituent group C represents the group consisting of: a hydroxyl group, a nitro group, a cyano group, a halogen atom, a C<sub>1-6</sub> alkyl group, a C<sub>1-6</sub> alkoxy group, a C<sub>1-6</sub> alkylthio group, a trifluoromethyl group, a group represented by the formula -NR<sup>C1</sup>-R<sup>C2</sup> (where each of R<sup>C1</sup> and R<sup>C2</sup> independently represent a hydrogen atom or C<sub>1-6</sub> alkyl group), a group represented by the formula -CO-R<sup>C3</sup>-R<sup>C4</sup> and a group represented by the formula -CH<sub>2</sub>-CO-R<sup>C3</sup>-R<sup>C4</sup> (where R<sup>C3</sup> represents a single bond, an oxygen atom, or a group represented by the formula -NR<sup>C5</sup>-; R<sup>C4</sup> and R<sup>C5</sup> each independently represent a hydrogen atom or a C<sub>1-6</sub> alkyl group).

15. (previously presented) The compound according to claim 1, or a salt or hydrate thereof, wherein  $R^1$  is a hydrogen atom, a  $C_{1-6}$  alkyl group which may have 1 to 3 substituents selected from the substituent group C described below, a 5 to 10-membered heteroaryl  $C_{1-6}$  alkyl group which may have 1 to 3 substituents selected from the substituent group C described below, or a  $C_{6-10}$  aryl  $C_{1-6}$  alkyl group which may have 1 to 3 substituents selected from the substituent group C described below:

<Substituent group C>

Substituent group C represents the group consisting of: a hydroxyl group, a nitro group, a cyano group, a halogen atom, a  $C_{1-6}$  alkyl group, a  $C_{1-6}$  alkoxy group, a  $C_{1-6}$  alkylthio group, a trifluoromethyl group, a group represented by the formula  $-NR^{C1}-R^{C2}$  (where each of  $R^{C1}$  and  $R^{C2}$  independently represent a hydrogen atom or a  $C_{1-6}$  alkyl group), a group represented by the formula  $-\text{CO}-R^{C3}-R^{C4}$  and a group represented by the formula  $-\text{CH}_2-\text{CO}-R^{C3}-R^{C4}$  (where  $R^{C3}$  represents a single bond, an oxygen atom, or a group represented by the formula  $-\text{NR}^{C5}$ ;  $R^{C4}$  and  $R^{C5}$  each independently represent a hydrogen atom or a  $C_{1-6}$  alkyl group);

16. (previously presented) The compound according to claim 14, or a salt or hydrate thereof, wherein the substituent group C is a group consisting of a cyano group, a  $C_{1-6}$  alkoxy group, a  $C_{2-7}$  alkoxycarbonyl group, and a halogen atom.

17. (previously presented) The compound according to claim 1, or a salt or hydrate thereof, wherein  $R^1$  is a methyl group, a cyanobenzyl group, a fluorocyanobenzyl group, a phenethyl group, a 2-methoxyethyl group, or a 4-methoxycarbonylpyridin-2-yl group.

18. (previously presented) The compound according to claim 1, or a salt or hydrate thereof, wherein  $R^1$  is a methyl group or a 2-cyanobenzyl group.

19. (previously presented) The compound according to claim 1, or a salt or hydrate thereof,

wherein  $R^2$  is a hydrogen atom, a cyano group, or a group represented by the formula  $-A^{21}-A^{22}$  (where  $A^{21}$  represents a single bond, an oxygen atom, a sulfur atom, a sulfinyl group, a sulfonyl group, a carbonyl group, a group represented by the formula  $-O-CO-$ , a group represented by the formula  $-CO-O-$ , a group represented by the formula  $-NR^{A2}$ , a group represented by the formula  $-CO-NR^{A2}$ , or a group represented by the formula  $-NR^{A2}-CO-$ ;

$A^{22}$  and  $R^{A2}$  each independently represent a hydrogen atom, a cyano group, a  $C_{1-6}$  alkyl group, a  $C_{3-8}$  cycloalkyl group, a  $C_{2-6}$  alkenyl group, a  $C_{2-6}$  alkynyl group, a  $C_{6-10}$  aryl group, a 5- to 10-membered heteroaryl group, a 4- to 8-membered heterocyclic group, a 5- to 10-membered heteroaryl  $C_{1-6}$  alkyl group, or a  $C_{6-10}$  aryl  $C_{1-6}$  alkyl group; however,  $A^{22}$  and  $R^{A2}$  each may independently have 1- to 3 substituents selected from the substituent group D described below:

<Substituent group D>

Substituent group D represents the group consisting of: a hydroxyl group, a cyano group, a nitro group, a halogen atom, a  $C_{1-6}$  alkyl group, a  $C_{1-6}$  alkoxy group, a  $C_{1-6}$  alkylthio group, a trifluoromethyl group, a group represented by the formula  $-NR^{D1}-R^{D2}$  (where  $R^{D1}$  and  $R^{D2}$  each independently represent a hydrogen atom or a  $C_{1-6}$  alkyl group), a group represented by the formula  $-CO-R^{D3}$  (where  $R^{D3}$  represents a 4 to 8-membered heterocyclic group), and a group represented by the formula  $-CO-R^{D4}-R^{D5}$  (where  $R^{D4}$  represents a single bond, an oxygen atom, or a group represented by the formula  $-NR^{D6}$ ;  $R^{D5}$  and  $R^{D6}$  each independently represent a hydrogen atom, a  $C_{3-8}$  cycloalkyl group, or a  $C_{1-6}$  alkyl group)).

20. (previously presented) The compound according to claim 1, or a salt or hydrate thereof,

wherein  $R^2$  represents a hydrogen atom, a cyano group, a carboxy group, a  $C_{2-7}$  alkoxycarbonyl group, a  $C_{1-6}$  alkyl group, a group represented by the formula  $-CONR^{D7}R^{D8}$  (where  $R^{D7}$  and  $R^{D8}$



each independently represent a hydrogen atom or a C<sub>1-6</sub> alkyl group), or a group represented by the formula -A<sup>23</sup>-A<sup>24</sup>

(where A<sup>23</sup> represents an oxygen atom, a sulfur atom or a group represented by the formula -NR<sup>A3</sup>;

A<sup>24</sup> and R<sup>A3</sup> each independently represent a hydrogen atom, a C<sub>1-6</sub> alkyl group which may have a substituent selected from the substituent group D1 described below, a C<sub>3-8</sub> cycloalkyl group which may have a substituent selected from the substituent group D1 described below, a C<sub>2-6</sub> alkenyl group which may have a substituent selected from the substituent group D1 described below, a C<sub>2-6</sub> alkynyl group which may have a substituent selected from the substituent group D1 described below, a phenyl group which may have a substituent selected from the substituent group D1 described below, or a 5 to 10-membered heteroaryl group which may have a substituent selected from the substituent group D1 described below:

<Substituent group D1>

Substituent group D1 represents the group consisting of: a carboxy group, a C<sub>2-7</sub> alkoxy carbonyl group, a C<sub>1-6</sub> alkyl group, a group represented by the formula -CONR<sup>D7</sup>R<sup>D8</sup> (where R<sup>D7</sup> and R<sup>D8</sup> each independently represent a hydrogen atom or C<sub>1-6</sub> alkyl group), a pyrrolidin-1-yl carbonyl group, a C<sub>1-6</sub> alkyl group, and a C<sub>1-6</sub> alkoxy group).

21. (previously presented) The compound according to claim 1, or a salt or hydrate thereof,

wherein R<sup>2</sup> represents a hydrogen atom, a cyano group, a C<sub>1-6</sub> alkoxy group, or a group represented by the formula -A<sup>25</sup>-A<sup>26</sup>

(where A<sup>25</sup> represents an oxygen atom, a sulfur atom, or a group represented by the formula -NR<sup>A4</sup>;

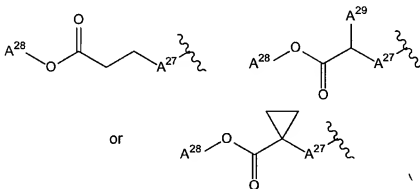
A<sup>26</sup> and R<sup>A4</sup> each independently represent a hydrogen atom, a C<sub>1-6</sub> alkyl group having a substituent selected from the substituent group D1 described below, a C<sub>3-8</sub> cycloalkyl group having a substituent selected from the substituent group D1 described below, or a

phenyl group having a substituent selected from the substituent group D1 described below:

<Substituent group D1>

Substituent group D1 represents the group consisting of: a carboxy group, a C<sub>2-7</sub> alkoxy carbonyl group, a C<sub>1-6</sub> alkyl group, a group represented by the formula -CONR<sup>D7</sup>R<sup>D8</sup> (where R<sup>D7</sup> and R<sup>D8</sup> each independently represent a hydrogen atom or a C<sub>1-6</sub> alkyl group), pyrrolidin-1-yl carbonyl group, a C<sub>1-6</sub> alkyl group, and a C<sub>1-6</sub> alkoxy group).

22. (previously presented) The compound according to claim 1, or a salt or hydrate thereof,  
wherein R<sup>2</sup> is a hydrogen atom, a cyano group, a methoxy group, a carbamoylphenyloxy group, or a group represented by the following formula:



(where A<sup>27</sup> represents an oxygen atom, a sulfur atom, or -NH-;

A<sup>28</sup> and A<sup>29</sup> each independently represent a hydrogen atom or a C<sub>1-6</sub> alkyl group).

23. (previously presented) The compound according to claim 1, or a salt or hydrate thereof, wherein R<sup>2</sup> is a hydrogen atom, a cyano group, or a 2-carbamoylphenyloxy group.

24. (currently amended) The compound according to claim 1, or a salt or hydrate thereof, wherein the compound of formula (I) indicated above is any one selected from the group consisting of:

**7-(2-butynyl)-2-cyano-1-methyl-8-(piperazin-1-yl)-1,7-dihydropurin-6-one,**  
**3-(2-butynyl)-5-methyl-2-(piperazin-1-yl)-3,5-dihydroimidazo[4,5-d]pyridazin-4-one,**  
**2-(3-aminopiperidin-1-yl)-3-(2-butynyl)-5-methyl-3,5-dihydroimidazo[4,5-d]pyridazin-4-one,**  
**2-[7-(2-butynyl)-1-methyl-6-oxo-8-(piperazin-1-yl)-6,7-dihydro-1H-purin-2-yl]benzamide,**  
**7-(2-butynyl)-1-(2-cyanobenzyl)-6-oxo-8-(piperazin-1-yl)-6,7-dihydro-1H-purine-2-carbonitrile,** and  
**2-[3-(2-butynyl)-4-oxo-2-(piperazin-1-yl)-3,4-dihydroimidazo[4,5-d]pyridazin-5-yl]methyl]benzonitrile.**

25. (original) A pharmaceutical agent comprising a compound of claim 1.

26. (original) A dipeptidyl peptidase IV inhibitor comprising a compound of claim 1.

27. (original) A pharmaceutical composition comprising a compound of claim 1 and an adjuvant useful for formulation.

28. (original) A preventive or a therapeutic agent for diabetes mellitus, which comprises a compound of claim 1.

29. (original) A preventive or therapeutic agent, which comprises a compound of claim 1, for diabetes mellitus, obesity, hyperlipidemia, AIDS, osteoporosis, a gastrointestinal disorder, angiogenesis, infertility, an inflammatory disease, an allergic disease, or cancer.

30. (original) An immunomodulator, a hormone modulator, or an anti-rheumatic drug, which comprises a compound of claim 1.

31. (original) A therapeutic or preventive method for a disease in which the inhibition of dipeptidyl peptidase IV is effective, wherein the method comprises administering to a patient a compound of claim 1, or a salt or hydrate thereof, in a pharmaceutically effective amount.

32. (original) The use of a compound of claim 1, or a salt or hydrate thereof, in producing a pharmaceutical agent.

33. (original) The use of a compound of claim 1, or a salt or hydrate thereof, in producing a therapeutic or preventive agent for a disease in which the inhibition of dipeptidyl peptidase IV is effective.